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OCT 27 2008

Atty Docket No.: 200207272-1
App. Ser. No.: 10/789,744

IN THE CLAIMS:

Please find a listing of the claims below, with the statuses of the claims shown in parentheses. This listing will replace all prior versions, and listings, of claims in the present application.

1. (Currently Amended) A carriage drive system, comprising:

a variable speed drive motor and a gearing mechanism configured to propel a movable carriage along a slide rod, wherein the movable carriage supports print heads having an ink ejecting nozzle, and wherein the gearing mechanism has variable-speed drive-motor-is-an-electric-motor-having a first gear ratio resulting in a high carriage speed and a second gear ratio resulting in a low carriage speed and comprises a planetary gear assembly having:

a sun gear driven by the drive motor;

a ring gear; and

a plurality of planet gears arranged between the sun gear and the ring gear,

wherein, at the second gear ratio, the sun gear rotates and the ring gear is

configured to rotate at a slower angular velocity than the sun gear; and

a centrifugal clutch operable to enable the gearing mechanism to switch between
the first and second gear ratios automatically based upon an operational speed of the
drive motor resulting in a high-carriage-speed-and-the-gear-ratio-resulting-in-a-low
carriage-speed wherein the centrifugal-clutch-is-an-automatic-two-way-clutch, such that
switching-between-the-gear-ratio-resulting-in-the-high-carriage-speed-to-the-gear-ratio
resulting-in-a-low-carriage-speed-and-switching-between-the-gear-ratio-resulting-in-the-low

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carriage speed to the gear ratio resulting in the high carriage speed both occur automatically based upon the operational speed of the drive motor.

2-3. (Cancelled).

4. (Currently Amended) A carriage drive system according to claim [[3] 1, wherein operation of the drive motor at a high speed causes the centrifugal clutch to engage the ring gear causing the planet gears and the drive gear to be locked together such that they rotate as one with the sun gear resulting in a 1:1 gear ratio between the sun gear and the ring gear and operation of the drive motor at a low speed causes the centrifugal clutch mechanism for switching between gear ratios to disengage the ring gear causing the sun gear to turn the planet gears which turn the ring gear resulting in a gear ratio greater than 1:1.

5. (Currently Amended) A carriage drive system according to claim [[3]] 1, further comprising a speed calibration member for adjusting [[thc]] a gear ratio between the drive motor and the ring gear.

6. (Currently Amended) A carriage drive system according to claim 5, wherein the gear ratio between the drive motor and the ring gear is proportional to a friction force between [[thc]] a planet carrier and the speed calibration member.

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7. (Currently Amended) A printer, comprising:

a movable carriage supporting print heads having an ink ejecting nozzle;
a slide rod for supporting and guiding the movable carriage;
a variable speed drive motor configured to propel the movable carriage along the slide rod, wherein the variable speed drive motor is an electric motor;
a gearing mechanism having a first gear ratio resulting in a high carriage speed and a second gear ratio resulting in a low carriage speed, wherin the gearing mechanism comprises a planetary gear assembly having:
a sun gear driven by the drive motor;
a ring gear, and
a plurality of planet gears arranged between the sun gear and the ring gear,
wherin, at the second gear ratio, the sun gear rotates and the ring gear is configured to rotate at a slower angular velocity than the sun gear; and
a centrifugal clutch operable to switch between the first and second gear ratios wherein the centrifugal clutch is an automatic two-way clutch, such that switching between the first and second gear ratios occurs automatically based upon an operational speed of the drive motor resulting in a high carriage speed-to-the-gear-ratio resulting in a low-carriage-speed-and-switching-between-the-gear-ratio-resulting-in-a-low-carriage-speed-to-the-gear-ratio-resulting-in-a-high-carriage-speed-both-occur-automatically-based-upon-the-operational-speed-of-the-drive-motor.

8-9. (Canceled).

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10. (Currently Amended) A printer according to claim [[9]] 7, wherein operation of the drive motor at a high speed causes the centrifugal clutch to engage the ring gear causing the planet gears and the drive gear to be locked together such that they rotate as one with the sun gear resulting in a 1:1 gear ratio between the sun gear and the ring gear and operation of the drive motor at a low speed causes the centrifugal clutch to disengage the ring gear causing the sun gear to turn the planet gears which turn the ring gear resulting in a gear ratio greater than 1:1.

11. (Currently Amended) A printer according to claim [[9]] 7, further comprising a speed calibration member for adjusting [[the]] a gear ratio between the drive motor and the ring gear.

12. (Currently Amended) A printer according to claim 11, wherein the gear ratio between the drive motor and the ring gear is proportional to a friction force between [[the]] a planet carrier and the speed calibration member.

13. (Original) A printer according to claim 12, wherein the speed calibration member is manually adjustable.

14. (Currently Amended) A method for printing, comprising:

activating a variable speed drive motor and a gearing mechanism to propel a movable carriage along a slide rod, wherein the movable carriage supports print heads having an ink ejection nozzle and, wherein the gearing mechanism variable-speed-drive

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motor is an electric motor having has a first gear ratio resulting in a high carriage speed and a second gear ratio resulting in a low carriage speed and comprises a planetary gear assembly having:

a sun gear driven by the drive motor;

a ring gear; and

a plurality of planet gears arranged between the sun gear and the ring gear,

wherein, at the second gear ratio, the sun gear rotates and the ring gear is

configured to rotate at a slower angular velocity than the sun gear; and

switching between the first and second gear ratios resulting in a high carriage speed-and-the-gear-ratio-resulting-in-a-low-carriage-speed;

wherein switching between the first and second gear ratios occurs automatically based on an operational speed of the drive motor resulting in a high carriage speed-to-the-gear-ratio-resulting-in-a-low-carriage-speed-and-switching-between-the-gear-ratio-resulting-in-the-low-carriage-speed-to-the-gear-ratio-resulting-in-the-high-carriage-speed both occur automatically by means actuated by the operational speed of the drive motor.

15. (New) A method for printing according to claim 14, wherein operation of the drive motor at a high speed causes the planet gears and the drive gear to lock together such that they rotate as one with the sun gear resulting in a 1:1 gear ratio between the sun gear and the ring gear.